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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,945	09/19/2003	Yiming Huai	2892P	6540

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EXAMINER

DINH, SON T

ART UNIT	PAPER NUMBER
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2824

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

Office Action Summary**Application No.**

10/665,945

Applicant(s)

HUAI ET AL.

Examiner

Son T. Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-30 is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/24/05; 4/10/06</u> . | 6) <input checked="" type="checkbox"/> Other: <u>East search history</u> . |

DETAILED ACTION

The RCE filed on 4/10/06 has been entered.

Claims 1-30 are pending in the application.

Claims 31-52 have been canceled (see Examiner amendment dated 10/3/05 for detail).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujiwara et al (US 2005/0002126 A1).

Regarding claim 1, figure 7 of Fujiwara et al discloses a magnetic element comprising a pinned layer (71) having a first magnetization, a current confined layer (74; also see paragraph 0042, line 5 for a CC-layer i.e. current confined layer) having at least one channel (74a), a free layer (71', it is noted that paragraph 0010, lines 3-6 teaches that either one of the layers next to the current confined layer is a pinned layer and the other is a free layer, and the same is applied to the layer 71, 71', 72 and 72' in figure 7) having a second magnetization, wherein the pinned layer 71, the free layer 71'

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and the current confined layer 74 are configured to allow the second magnetization of the free layer to be switched using spin transfer. To be more specific, a spin transfer operation is nothing than an operation that involves a current driven switching operation.

Regarding claim 3, element 72 (figure 7) is a second pinned layer, and element 73 is a spacer layer residing between the free layer 71' and the second pinned layer 72.

Regarding claim 4, element 74' (figure 7) is a second current confined layer.

Regarding claim 5, the spacer 73 clearly has a particular thickness and allows tunneling of current between the free layer 71' and the second pinned layer 72.

Regarding claim 6, the spacer 73 is clearly a conducting spacer layer (see paragraph 0042, line 19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al in view of Covington (U.S. Patent No 6,865,109).

Fujiwara applied as above.

Regarding claim 7, the only difference between Fujiwara et al and claim 7 is that Fujiwara et al fail to disclose a synthetic free layer including a first ferromagnetic layer and a second ferromagnetic layer separated by a nonmagnetic layer.

Covington discloses a magnetic memory device that comprises a synthetic free layer having a first ferromagnetic layer and a second ferromagnetic layer separated by a nonmagnetic layer (see abstract, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Fujiwara et al by incorporating a synthetic free layer that comprises a first ferromagnetic layer and a second ferromagnetic layer separated by a nonmagnetic layer in a magnetic memory device so as to store data as taught by Covington.

Regarding claim 2, the selection of the size of the channel would have been an obvious design choice because applicant has not disclosed that the deminsions are for a particular unobvious purpose, produce an unexpected result, or otherwise critical.

Allowable Subject Matter

Claims 9-30 are allowed.

Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or suggest a magnetic memory device comprising a first conductive layer disposed between a free layer and a current confined layer and a second conductive layer disposed between a pinned layer and a current confined layer (claim 8); a magnetic memory device having first pinned layer, current

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confined layer, a first free layer, and a spin tunneling junction (or a spin valve as in claim 16, or a dual spin valve as claimed in claim 24) with particular connection as claimed in claims 9, 16, 24).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

-Nagasaka et al disclose a magnetic memory device having a current confined layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son T. Dinh whose telephone number is 571-272-1868. The examiner can normally be reached on Monday to Friday 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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S. Dinh

April 29, 2006



S. Dinh